

REMARKS

In the Office Action, Claims 1, 3 to 7 and 9 to 18 were rejected under 35 U.S.C. § 103(a) over U.S. Publication No. 2002/0181765 (Mori), U.S. Publication No. 2002/0181775 (Matsugu '775) and European Publication No. 1164537 (Matsugu '537). Claim 8 was rejected under § 103(a) over Mori, Matsugu '775, Matsugu '537 and U.S. Patent No. 5,570,434 (Badique). These rejections are respectfully traversed, as discussed more fully below.

Independent Claims 1, 13 and 14 generally concern identifying a pattern of input data. A feature of a first layer is extracted from the input data, and a distribution of a feature extraction result is analyzed. There is a calculation of a respective likelihood of extracting a feature of a second layer of one of a plurality of categories for features.

According to aspects of Claims 1, 13 and 14, there is selective activation of at least one extraction module among a plurality of extraction modules for extracting features of respective categories. The selected extraction module has a calculated respective likelihood of extracting the feature for that category which is not less than a predetermined value. A feature of the second layer is extracted by the selectively activated extraction module.

By virtue of this arrangement, in which there is selective activation of only certain extraction modules having a high likelihood of extracting a feature for a respective category, it is ordinarily possible to perform pattern recognition while reducing processing requirements and identification errors.

Referring specifically to claim language, independent Claim 1 is directed to a pattern identification method of identifying a pattern of input data by hierarchically extracting features of the input data. The method includes using a processor to perform a first feature extraction step of extracting a feature of a first layer from the input data, and an analysis step of

analyzing a distribution of a feature extraction result in the first feature extraction step. The processor further performs a calculation step of calculating a respective likelihood of extracting from the input data a feature of one of a plurality of categories for features of a second layer, each feature of the second layer corresponding to a combination of features of the first layer, on the basis of the distribution analyzed in the analysis step. In addition, the processor performs an activation step of selectively activating at least one extraction module, among a plurality of extraction modules for extracting features of respective categories, whose calculated likelihood of the category for the feature of the second layer to be extracted from the input data is not less than a predetermined value. Additionally, the processor performs a second feature extraction step of extracting a feature of the second layer from the input data by the selectively activated extraction module, and a storing step of storing the extracted feature of the second layer in a memory.

Independent Claims 13 and 14 are directed to an apparatus and a computer-readable storage medium, respectively, substantially in accordance with the method of Claim 1.

The applied art is not seen to disclose or suggest the features of Claims 1, 13 and 14, and in particular is not seen to disclose or suggest at least the features of (i) selectively activating at least one extraction module among a plurality of extraction modules for extracting features of respective categories, whose calculated likelihood of a category for a feature to be extracted is not less than a predetermined value, and (ii) extracting a feature of the second layer from the input data by the selectively activated extraction module.

Pages 5 and 6 of the Office Action concede that Mori and Matsugu '775 do not disclose selectively activating at least one extraction module among a plurality of extraction modules for extracting features of respective categories, whose calculated likelihood of a

category for a feature of a second layer to be extracted from input data is not less than a predetermined value, and extracting a feature of the second layer from the input data by the selectively activated extraction module.

Nevertheless, pages 3 and 6 of the Office Action assert that Matsugu '537 (paragraphs [0182], [0183] and [0267]) discloses these features. As understood by Applicants, Matsugu '537 is directed to a pattern detecting apparatus with a plurality of hierarchized neuron elements to detect a predetermined pattern. Pulse signals output by the plurality of neuron elements are given specific delays by synapse circuits associated with the elements. See Matsugu '537, Abstract.

However, the cited portions of Matsugu '537 simply disclose feature detection layers and feature integration layers which form a set of processing channels at a plurality of resolutions or scale levels as a whole. See Matsugu '537, paragraphs [0182] and [0183]. "The channel activation control circuit or the gating circuit sets a neuron threshold values for the subsequent layers on the basis of the channel activation degree for each window for each channel or scale level, or conducts control [of] signal levels by amplifying or attenuating them, or allow[ing] signals of only a selected channel to pass." Matsugu '537, paragraph [0267].

Thus, the cited portions of Matsugu '537 simply disclose amplifying, attenuating, or selecting a signal based on an activation degree of a processing channel. However, those of ordinary skill would recognize that Matsugu 537's amplification and attenuation are different from the claimed plural extraction modules, and that Matsugu 537's activation degree is different from the claimed calculated likelihood.

Accordingly, the cited portions of Matsugu '537 are not seen to disclose or suggest selectively activating extraction modules for extracting certain categories of features,

much less (i) selectively activating at least one extraction module among a plurality of extraction modules for extracting features of respective categories, whose calculated likelihood of a category for a feature to be extracted is not less than a predetermined value, and (ii) extracting a feature of the second layer from the input data by the selectively activated extraction module.

Badique has been reviewed and is not seen to remedy the deficiencies of Mori, Matsugu '775, and Matsugu '537.

Therefore, independent Claims 1, 13 and 14 are believed to be in condition for allowance, and such action is respectfully requested.

The other claims in the application are each dependent from the independent claims discussed above and are therefore believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the claims, however, the individual consideration of each on its own merits is respectfully requested.

No other matters being raised, the entire application is believed to be in condition for allowance, and such action is courteously solicited.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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